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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALBANY INTERNATIONAL CORP.

Appeal 2009-005600
Application 10/720,489
Technology Center 3600

Decided: September 23, 2009

Before JAMESON LEE, SALLY C. MEDLEY, and
MICHAEL P. TIERNEY, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is a decision on appeal by the real party in interest, Albany International Corp. (AIC), under 35 U.S.C. § 134(a) from a final rejection of

claims 1, 3, 5, and 7-12. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

References Relied on by the Examiner

Bascom et al. (Bascom)	3,263,799	Aug. 2, 1966
Lefferts	5,514,456	May 7, 1996
Franchi	6,932,756 B2	Aug. 23, 2005
Fukuyama et al. (Fukuyama)[1]	JP 04024298	Jan. 28, 1992
Toyofuku[2]	JP 10029252	Feb. 3, 1998

The Rejections on Appeal

The Examiner rejected claims 1, 5, and 10 under 35 U.S.C. § 103(a) as unpatentable over Franchi, Fukuyama, and Toyofuku.

The Examiner rejected claims 3, 8, and 11 under 35 U.S.C. § 103(a) as unpatentable over Franchi, Fukuyama, Toyofuku, and Bascom.

The Examiner rejected claims 7, 9, and 12 under 35 U.S.C. § 103(a) as unpatentable over Franchi, Fukuyama, Toyofuku, and Lefferts.

The Invention

The invention relates to belts used by machines that manufacture corrugated paper board. (Spec. 1:5-8.)

Claim 1 is reproduced below (App. Br. 17 Claims App'x):

> A belt for use on a corrugator machine in the manufacture of corrugated packaging board, said belt comprising:

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[1] In this opinion, citations to the disclosure of Fukuyama refer to the English translation of that document that is dated "May 2008" and was mailed on July 9, 2008.

[2] Citations to the disclosure of Toyofuku refer to the English translation of that document that is dated "May 2008" and was mailed on March 9, 2009.

an endless spiral-link base, said base defining a top surface and a bottom surface and including a plurality of metal spirals, each spiral defining an internal space, wherein the spirals are interconnected by a series of parallel pintles extending through the internal spaces of adjacent spirals,

wherein the belt is a singlefacer belt.

B. ISSUES

1. Has AIC shown that the Examiner erred in determining that the combined teachings of Franchi, Fukuyama, and Toyofuku teach a belt for a cardboard corrugator machine where the belt includes an endless spiral-link base with spirals made of metal?

2. Has AIC shown that the Examiner erred in determining that the combined teachings of Franchi, Fukuyama, Toyofuku, and Bascom teach the use of stainless steel as the material of the spiral-link base?

3. Has AIC shown that the Examiner erred in determining that the combined teachings of Franchi, Fukuyama, Toyofuku, and Lefferts teach filler means disposed within the spirals of the spiral-link base?

C. FINDINGS OF FACT

Franchi

1. Franchi discloses a belt for a corrugated cardboard manufacturing machine where the belt is made of a "multispiral fabric" with a plurality of "spirally wound helical bands." (Franchi 1:64-2:6.)

2. As explained in Franchi, the configuration and material of its belt represents an improvement over conventional fabrics such as felt

because conventional fabrics are relatively heavy and are difficult to assemble on the machine. (*Id.* at 1:37-38.)

3. Franchi also discloses that conventional fabrics in particular also have a high friction coefficient. (*Id.* at 2:41-44.)

4. The weight of conventional fabrics taken with the higher friction coefficient increases energy consumption of the cardboard manufacturing machine. (*Id.* at 1:38-40.)

5. Conventional fabrics also have a low permeability that impairs the dispersion of steam issuing from cardboard. (*Id.* at 1:40-42.)

6. Compared to prior art conventional fabric, the multispiral woven fabric of Franchi's belt has a lower friction coefficient, is lighter weight, and is more permeable. (*Id.* at 2:31-55.)

Fukuyama

7. Fukuyama discloses an endless belt used in a papermaking process. (Fukuyama 3:15-18.)

8. Fukuyama recognizes that prior art woven fabric belts have shortcomings as they may be easily deformed due to low strength resulting in a belt with poor durability. (*Id.* at 4:9-12.)

9. Fukuyama overcomes those shortcomings by forming its belt as a net composed of interconnected spiral wires 2a and linear connecting wires 2b all made of metal. (*Id.* at 5:11-22; 7:12-16.)

10. Fukuyama teaches the use of stainless steel for its spiral-link belt. (*Id.* at 8:22-9:1.)

Toyofuku

11. Toyofuku discloses that corrugated cardboard making machines include both a singlefacer section and a doublefacer or doublebacker section. (Toyofuku 8: ¶ 17.)

Bascom

12. Bascom teaches a conveyor belt made from helical wires woven together. (Bascom 1:9-11.)

13. As disclosed in Bascom, the wires are made of stainless steel. (*Id.* at 1:49-50.)

Lefferts

14. Lefferts discloses a spiral link belt used in paper machines where the belt is formed by a plurality of connected helices. (Lefferts 1:6-18.)

15. Lefferts states (*Id.* at 1:18-23):

> To achieve a low permeability to air, it is necessary to fill the free inside space of the helices with filling material. If the permeability to air is too great, the spiral link belt creates a very strong turbulent air flow which can lead to uneven running and even to the breakage of the paper web.

D. PRINCIPLES OF LAW

A reference only teaches away when it suggests the developments flowing from its disclosures are unlikely to produce the objective of the applicant's invention. *Syntex (U.S.A) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005).

Where a rejection is based on multiple references, the test for obviousness is what the combined teachings of those references would have

suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

E. ANALYSIS

AIC argues the claims in three groupings: (1) claims 1, 5, and 10; (2) claims 3, 8, and 11; and (3) claims 7, 9, and 12.

Claims 1, 5, and 10

Independent claims 1, 5, and 10 were rejected based on the combined teachings of Franchi, Fukuyama, and Toyofuku. Each claim is drawn to a belt for use in making corrugated packaging board. Each claim requires that the belt has an "endless spiral-link base" that includes "a plurality of metal spirals." The Examiner found that Franchi discloses a spiral-link belt structured as required by the claims except for the spirals being made of metal. (Ans. 3:8-10) The Examiner turned to Fukuyama as disclosing a spiral-link belt with spirals made of metal wire. (*Id.* at 3:10-11.) The Examiner reasoned that one with ordinary skill in the art would have modified Franchi's belt to be made out of metal wire as taught in Fukuyama for improving the strength of the belt. (*Id.* at 4:12-14.)

AIC contends that Franchi teaches away from using metal as the material for its belt. (App. Br. 9:1-12; Reply Br. 9:16-19.) In particular, AIC points to the following disclosure in Franchi (Franchi 1:37-41):

> Felt or conventional fabrics are also relatively heavy and therefore difficult to assembly onto the machine; the weight combined with a high friction coefficient, of such materials increases the energy consumption of the machine[.]

AIC also relies on the following passage in Franchi: "[t]he lighter weight of multispiral fabrics as compared with felt or conventional fabrics

also makes for easier handling and for easier, faster assembly to the corrugating machine." (Franchi 2:47-50.) Based on the above-quoted portions, AIC concludes that making Franchi's belt from the metal wire material disclosed in Fukuyama will increase the weight of the belt in a manner contrary to the teachings of Franchi. (App. Br. 9-12; Reply Br. 10:14-15.)

AIC's arguments are unpersuasive. The passages quoted by AIC do not teach away from the use of metal wire. They do not even mention metal wire. Franchi discloses a belt for a corrugated cardboard manufacturing machine where the belt is made of a "multispiral fabric" with a plurality of "spirally wound helical bands." (Franchi 1:64-2:6.) As explained in Franchi, the configuration and material of its belt represents an improvement over conventional fabrics, such as felt. According to Franchi, such conventional fabrics are relatively heavy and are difficult to assemble on the machine. (*Id.* at 1:37-38.) Those fabrics in particular also have a high friction coefficient. The weight taken with the high friction coefficient increases energy consumption of the machine. (*Id.* at 1:38-40.) Furthermore, conventional fabrics have a low permeability that impairs the dispersion of steam issuing from cardboard. (*Id.* at 1:40-42.)

In Fukuyama, however, the metal spiral wires that make up the belt are not conventional fabric such as felt. AIC has not directed us to any evidence that the metal spiral wires of Fukuyama's belt would have the same negative combined characteristics that Franchi associates with conventional fabrics, *i.e.*, heavy weight, high coefficient of friction, and low permeability. Argument of counsel cannot take the place of evidence lacking in the record. *Estee Lauder Inc. v. L'Oreal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997).

Moreover, a reference only teaches away when it suggests the developments flowing from its disclosures are unlikely to produce the objective of the applicant's invention. *Syntex (U.S.A) LLC,* 407 F.3d at 1380. The objective of AIC's invention is to produce a belt made of a material that demonstrates improved characteristics such as strength, wear resistance, heat conduction, and permeability over prior art woven fabrics. (Spec. 3:26-32.)

Fukuyama discloses an endless belt used in a papermaking process. (Fukuyama 3:15-18.) Fukuyama recognizes that prior art woven fabric belts have shortcomings as they may be easily deformed due to low strength resulting in a belt with poor durability. (*Id.* at 4:9-12.) Fukuyama overcomes those shortcomings by forming its belt as a net composed of interconnected spiral wires 2a and linear connecting wires 2b all made of metal. (*Id.* at 5:11-22; 7:12-16.) While Franchi discounts a belt made of conventional fabrics due to the weight, friction coefficient, and permeability of those fabrics, that disclosure does not convey that a belt made of metallic wire spiral, as taught in Fukuyama, would be unlikely to produce a belt with increased strength, wear resistance, heat conduction, and permeability.

Furthermore, Franchi does not disclose that a material's weight is the sole factor considered in evaluating its suitability as a material for a belt used in a cardboard manufacturing machine. Rather, Franchi discloses that it is the combination of factors such as weight, friction coefficient, and permeability that matters. (Franchi 2:31-55.) Thus, even if a belt made of metal spirals has a greater weight than the belt of Franchi's preferred embodiment, which has not been established to be so, that still does not indicate that metal wire is not suitable material for Franchi's belt. AIC does

not address the coefficient of friction or permeability of metal wire as compared to that of conventional fabric. A belt made of metal wire may be superior in those attributes.

In any event, nothing in Franchi indicates that a belt made of a heavier material with a higher coefficient of friction and lower permeability would be inoperative or non-functional. That some materials work better than others does not constitute a teaching away from the less preferred material. One with ordinary skill would recognize that both are viable embodiments. We reject AIC's argument that Franchi teaches away from the use of metal wire for its belt.

AIC also argues that Examiner has not identified proper motivation to modify the material of Franchi's belt. In particular, AIC contends that "Franchi does not see any 'benefit' in replacing his synthetic polymer spirals with metals spirals," (App. Br. 12:4-5) and "[t]here is no suggestion in Franchi for using any material other than a synthetic polymeric fiber[]" (*Id.* at 14:1-4).

AIC's arguments are misplaced. It is not necessary that a reference itself recognize a benefit to be achieved by making its own modification. Rather, where, as here, a rejection is based on multiple references, the test for obviousness is what the combined teachings of those references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d at 425.

In this case, the Examiner pointed in-part to the combined teachings of Franchi and Fukuyama. (Ans. 3:8-11.) Franchi discloses an endless spiral-link belt made of fabric. (Franchi 1:64-2:6.) Fukuyama discloses an endless spiral-link belt made of metal wire. (Fukuyama 7:14-16.)

Fukuyama also teaches that belts made of fabrics exhibit poor durability and low strength (*Id.* at 4:9-12) whereas the metal wire belt of its invention "has suitable flexibility, elongates very little, is easy to be made uniform in terms of thickness, is easy to be made endless, is easy to adjust in terms of dimensions, and also has excellent durability." (*Id.* at 5:11-14).

In light of those teachings in Fukuyama, the Examiner determined that a person of ordinary skill in the art would have made Franchi's belt from metal wire as taught in Fukuyama to increase the strength of Franchi's belt. (Ans. 4:12-18.) That determination is reasonable. AIC contends that the above quoted benefits of Fukuyama's belt "are not derived from the use of metal, but because of its netted material of multiple spiral wires." (Reply Br. 11:27-12:1.) Yet, AIC does not point to any portion of Fukuyama that disclaims metal as contributing to the disclosed benefits. Indeed, Fukuyama explicitly states that metal is desirable for its spiral wires (Fukuyama 6:5-6) and discounts fabrics as having low strength. (*Id.* at 4:9-12.) Given those teachings, we are not persuaded of any error in the Examiner's determination that a person of ordinary skill in the art would have substituted metal wire, as taught in Fukuyama, for the fabric spirals of Franchi's belt to increase the strength of the belt.

Lastly, in the Reply Brief, AIC belatedly raises the argument that the terms "singlefacer belt" or "doublebacker belt" that appear in claims 1, 5, and 10 "implicitly require a particular structure for the belts." (Reply Br. 8:16-20.) Evidently, AIC now contends that none of Franchi, Fukuyama, and Toyofuku discloses the implicit structure required by those terms.

AIC does not explain what structure is "implicit" by way of the terms "singlefacer" and "doublebacker." AIC's specification discloses that "the

present invention relates to the belts that may be used on the singlefacer and/or doublebacker sections of a corrugated board production line." (Spec. 1:8-11.) Thus, a "singlefacer belt" is simply a belt used in the singlefacer section of a machine that makes cardboard while a "doublebacker belt" is a belt used in the doublebacker section.

Furthermore, the specification expressly describes what structure makes up a "singlefacer belt" and a "doublebacker belt." (*Id.* at 4:2-18.) The structure described for both belts is identical and corresponds to the structural features set forth in the body of each of AIC's claims 1, 5, and 10. The specification also identifies the single structure shown in Figure 2 as being the base structure for both a singlefacer and doublebacker belt. (*Id.* at 4:29-32.) Based on AIC's specification, the terms "singlefacer" and "doublebacker" simply describe how the belt is used and do not themselves describe any structural characteristics of the belt.

Franchi discloses belts used in machines that make corrugated cardboard. Toyofuku discloses that corrugated cardboard making machines include both a singlefacer section and a doublefacer or doublebacker section. (Toyofuku 8: ¶ 17.) When Franchi's belt is used in the singlefacer section it is a singlefacer belt and when used in the doublebacker section it is a doublebacker belt. In light of the teachings of Franchi and Toyofuku, the Examiner determined that the recitations in the claims of "singlefacer belt" and "doublebacker belt" were satisfied. AIC does not explain why or how there is error in that determination.

For all the foregoing reasons, we sustain the rejection of claims 1, 5, and 10 as unpatentable over Franchi, Fukuyama, and Toyofuku.

Claims 3, 8, and 11

Claims 3, 8, and 11 are dependent on claims 1, 5, and 10, respectively. Each of claims 3, 8, and 11 adds the limitation that the "the spiral-link base comprises stainless steel." (App. Br. 17-18 Claims App'x.)

Claims 3, 8, and 11 were rejected based on the combined teachings of Franchi, Fukuyama, Toyofuku, and Bascom. The Examiner pointed to Bascom as teaching the use of stainless steel for a spiral-link belt. (Ans. 3:15-17.) The Examiner reasoned that it would have been obvious to a person of ordinary skill in the art to make Franchi's spiral-link belt out of the stainless steel disclosed in Bascom. (*Id.* at 6:1-3.) AIC contends that Franchi teaches away from using stainless for its belt because that material would increase the weight of the belt. (Reply Br. 13:1-10.)

For the same reasons given above, we reject AIC's argument that Franchi teaches away from the use of a metal, such as stainless steel, for the material of the spiral links of its belt. AIC has not shown that the Examiner erred in relying on Bascom as teaching that stainless steel may be used as the material of a spiral-link belt. Additionally, we note that Fukuyama also teaches the use of stainless steel for its spiral-link belt. (Fukuyama 8:22-9:1.)

We sustain the rejection of claims 3, 8, and 11 as unpatentable over Franchi, Fukuyama, Toyofuku, and Bascom.

Claims 7, 9, and 12

Claims 7, 9, and 12 are dependent on claims 1, 5, and 10, respectively. Each of claims 7, 9, and 12 add the limitation of a "filler means disposed within said spirals." (App. Br. 17-18 Claims App'x.)

Claims 7, 9, and 12 were rejected based on the combined teachings of Franchi, Fukuyama, Toyofuku, and Lefferts. The Examiner relied on Lefferts as disclosing a spiral-link belt that includes filler means disposed within spirals of the belt for reducing air permeability. (Ans. 3:21-4:2.) The Examiner reasoned that it would have been obvious to one of ordinary skill in the art to modify the spiral-link belt taught by the combination of Franchi, Fukuyama, and Toyofuku to incorporate fillers within the spirals as taught by Lefferts in order to reduce the air permeability of the belt. (Ans. 3:20-4:2.)

AIC contends that Franchi teaches away from reducing the air permeability of its belt. (Reply Br. 13:18-14:8.) In support of that contention, AIC points to the following statement in Franchi: "not being very permeable, felt or conventional fabrics not only impair dispersion of the steam issuing from the cardboard, but also call for coating the cardboard with a relatively large amount of glue." (Franchi 1:41-44.) AIC argues that given that statement, a person of ordinary skill in the art would be discouraged from reducing the air permeability of Franchi's belt.

AIC's argument is unpersuasive. The above-quoted portion of Franchi refers only to an undesirable trait that is specific to prior art belts formed from a strip of conventional fabric, *i.e.*, that such material impairs the dispersion of steam. It does not teach away from or otherwise discredit the reduction in air permeability for belts formed by linking together metal spirals as taught by the combination of Franchi, Fukuyama, and Toyofuku. We reject AIC's teaching away argument.

Lefferts discloses a spiral link belt used in paper machines where the belt is formed by a plurality of connected helices. (Lefferts 1:6-18.) Lefferts states (*Id.* at 1:18-23):

> To achieve a low permeability to air, it is necessary to fill the free inside space of the helices with filling material. If the permeability to air is too great, the spiral link belt creates a very strong turbulent air flow which can lead to uneven running and even to the breakage of the paper web.

In light of that teaching, the Examiner determined that a person of ordinary skill in the art would have used filling material in a metal wire spiral-link belt to reduce the air permeability of the belt. That determination is reasonable. According to Lefferts, reducing the air permeability of a spiral-link belt in a paper machine is beneficial because it eliminates a turbulent air flow that can cause uneven running and breakage of a paper web carried by the belt. A cardboard manufacturing machine includes a belt that carries a sheet of cardboard through the machine. AIC does not explain why one with ordinary skill in the art would not have recognized that the benefit resulting from low air permeability of a spiral-link belt of a paper machine, as in Lefferts, would also apply to a metal wire spiral-link belt used in a cardboard machine, as taught by the combination of Franchi, Fukuyama, and Toyofuku. AIC has not shown that the Examiner erred in rejecting claims 7, 9, and 12 based on the combined teachings of Franchi, Fukuyama, Toyofuku, and Lefferts.

We sustain the rejection of claims 7, 9, and 12 as unpatentable over Franchi, Fukuyama, Toyofuku, and Lefferts.

F. CONCLUSION

1. AIC has not shown that the Examiner erred in determining that the combined teachings of Franchi, Fukuyama, and Toyofuku teach a belt for a cardboard corrugator machine where the belt includes an endless spiral-link base with spirals made of metal.

2. AIC has not shown that the Examiner erred in determining that the combined teachings of Franchi, Fukuyama, Toyofuku, and Bascom teach the use of stainless steel as the material of the spiral-link base.

3. AIC has not shown that the Examiner erred in determining that the combined teachings of Franchi, Fukuyama, Toyofuku, and Leffert teach filler means disposed within the spirals of the spiral-link base.

G. ORDER

The rejection of claims 1, 5, and 10 under 35 U.S.C. § 103(a) as unpatentable over Franchi, Fukuyama, and Toyofuku is affirmed.

The rejection of claims 3, 8, and 11 under 35 U.S.C. § 103(a) as unpatentable over Franchi, Fukuyama, Toyofuku, and Bascom is affirmed.

The rejection of claims 7, 9, and 12 under 35 U.S.C. § 103(a) as unpatentable over Franchi, Fukuyama, Toyofuku, and Leffert is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

MAT

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